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Unexplained Weight Gain Transients at the Moment of Death

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Abstract—Twelve animals (one ram, seven ewes, three lambs and one goat) were studied. At the moment of death an unexplained weight gain transient of 18 to 780 grams for 1 to 6 seconds was observed with seven adult sheep but not with the lambs or goat. The transients occurred in a quiet time at the moment of death when all breathing and movement had ceased. These transient gains are anomalous in that there is no compensating weight loss as required by Newton's Third Law. There was no permanent weight change at death. Dynamic weight measurements may present a fruitful area of investigation.

Keywords: weight change at death — death — transient weight gains — sheep

Introduction

The question of a change in body weight at death has been considered for almost a century. The experiment reported here is the first to use a sensitive, one part in 20,000, electronic scale with a response time of 0.2 seconds. Previous measurements have all been made with beam balance scales. Almost every parameter of the physiology of humans and animals has been accurately measured at the time of death, except weight. It is always assumed to be a constant except for respiration, medical aids or excreted losses. In this study, however, an anomalous transient gain at the moment of death has been consistently observed with adult sheep. The existence of such transients would open an interesting area of investigation and provide a tool to determine the moment of death (Hollander, 1998). In a concurrent study on humans during sleep (dreaming) and meditation similar transient weight gains have been observed but thus far the effect is unpredictable. During levitation experiments on humans, Hasted et al. reported that "four sharply peaked weight-increase signals were recorded in otherwise quiet sessions", and that a second subject exhibited "two sudden 5 second weight increase signals of about one kilogram" (Hasted et al., 1983). These values are consistent in both magnitude and duration with the transients observed in sheep at the moment of death and are the only other reported weight measurements done with an electronic scale.

Experimental Procedure

The experiments reported here used a platform 215 cm by 92 cm, placed on a steel frame, which in turn was supported on four load cells of 45 kg capacity

each. The ambient temperature was controlled to reduce any temperature dependence. A Toledo model 8132 Electronic Digital Indicator received the output of the load cells and fed the data to a computer for storage and analysis. The measured response time of the system was 0.2 seconds. The full-scale capacity of the system was 100 kg, with a sensitivity of ~ 5 gm. The animals were all destined to be destroyed, and the experiments were under veterinarian supervision with maximum concern for the well-being of the animals. Of the sheep, there were one ram, three lambs, and seven ewes. In addition one goat was studied. These were sedated with Rompun (xylazine from Haver-Lockhardt Lab.), wrapped in plastic, and then placed on the scale. The wrapping contained any voiding and fluid losses but was not air tight and permitted evaporation. Death was induced by asphyxiation. A plastic bag was placed over the animal's head. The heart rate was measured by affixing two electrodes and the output read by a Parks, Model 510-C heart monitor. Movement and respiration were observed visually. The weight measurement sample rate was 2 times per second except for ewes 11 and 12 which were sampled at a rate of 21 times per second. The normal electrical heart signal would be rhythmic in the order of 70 beats per minute in the early stages, then elevate to 120 or more and then become erratic for several minutes before cessation. During the erratic period there could be periods of 30 seconds or more with no signal. Breathing would start shallow and rhythmic and become erratic and deep. There was usually one large muscle contraction prior to death which could be visually ascertained. Careful notes were taken throughout the entire process and all movements were noted, so they could be accounted for later. During all these experiments there was a loss of water vapor from respiration and evaporation. It is of the order of 50 to 200 mg/second. The loss slows to 30 to 40 mg/second near death.

Results

The results for the twelve animals tested are summarized in Table 1. A meaningful transient was observed during a quiet time after the last deep breath at the estimated time of death in sheep numbers 1, 2, 3, 4, 6, 7 and 8. Sheep 3, shown in Figure 1, is a typical example of a transient occurring after the last deep breath and during a period of calm, free of any movement. The transient can occur anytime between 10 seconds and 200 seconds after the last deep breath. For sheep 3 in Figure 1 the time was 195 seconds after the last breath and in this case it coincided with termination of the heart signal. A weight gain transient of 74 gm for 6 seconds was observed. The graph for sheep 7, as shown in Figure 2, was included because it exhibited an unusually large pulse of 780 grams which occurred 11 seconds after the last breath and was followed by a damped oscillation which was not visually observed. This is unusual because it is 10 times greater in magnitude than the others and the damped oscillation had not been seen in any other experiments. It does however come 11 seconds after the last breath and has little or no compensating weight loss. The electrical heart signal was erratic during this time. A plot of

TABLE 1
Summary of Results

Type of animal	Initial weight (kg)	Magnitude (grams) and duration (seconds) of weight gain transient observed at the moment of death	
1. Mature ram	91.6	36	[A]
2. Mature ewe	99.8	18	4.0
3. Mature ewe	88.9	74	6.3
4. Mature ewe	69.4	145	1.0
5. Mature ewe	87.0	[B]	[B]
6. Mature ewe	83.0	220	1.5
7. Mature ewe[C]	70.2	780	4.0
8. Mature ewe[C]	92.2	30	4.0
9. Lamb, castrated	56.6	—	—
10. Lamb, female	61.6	—	—
11. Lamb, buck	53.5	—	—
12. Mature goat	52.2	—	—

[A] Measurement was recorded manually and time was not accurate.
[B] Movement occurred at the estimated time of death and no meaningful weight transient was discerned.
[C] Sheep numbers 7 and 8 were measured with a Panther model Toledo scale at 21 samples per second.

sheep 8 as shown in Figure 3 was included because of the two identical, 30 gram pulses and a third smaller pulse spaced 17 seconds apart after the last breath and during a period of no movement.

The heart rate measurement is only an indication of electrical activity in the heart and probably does not result in the heart actually pumping blood. Since the heart muscle is oxygen starved it cannot respond to the electrical signal of the pacemaker. Each test subject had its own unique characteristics.

Discussion

Every effort was made to ascertain the origin of weight variations, which result from inertial dynamics such as movement and breathing. The normal breathing appears as a rhythmic series of inertial weight gains followed by corresponding losses. The same is true for movement, for every inertial change there is a balancing change in the opposite direction in compliance with Newton's Third Law. The observed transients at the moment of death are anomalous because there is no compensating loss following the transient weight increase. An external force of equal magnitude to the observed weight transient would be required to produce the observed results.

The moment of death is difficult to determine. The body attempts to maintain essential functions. The criteria used were movement, breathing and heart rate. There is a characteristic last deep breath, erratic electrical heart signal and a major muscle contraction. These precede a period of calm with some continuing sporadic electrical signals from the heart. The time of the last breath is ac-

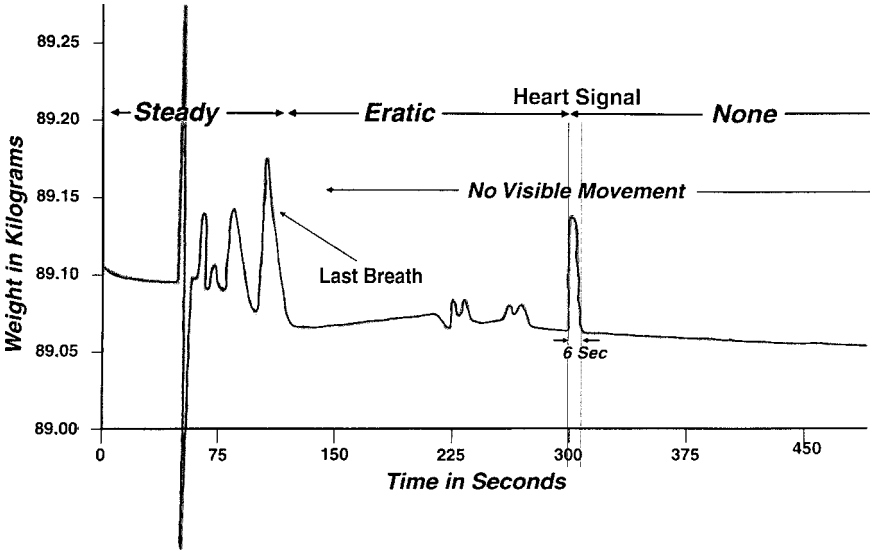

Fig. 1. Weight versus time for sheep 3 near death.

curately determined from the weight data and can be visually observed. The anomalous transient is observed anywhere from 5 to 200 seconds after the last breath. There is usually no movement after the last breath.

Experiments were conducted to try to simulate possible fluid movements within the body, which could account for the observed transients. If sufficient mass were located in the upper part of the animals body and allowed to drop or flow a transient pulse would be observed. This requires a movement of several liters of fluid flowing relatively unobstructed to achieve a 50 to 100 gram transient pulse. Such a large movement of the animal's anatomy would be readily observable visually.

The results of the weight experiments reported here are very preliminary but do suggest that there is a transient gain in weight at death. The pulse reported here occurred in over half of the animals tested and all of the mature sheep. The pulse may well have existed for the others too but was obscured by movement or other factors and not observed.

Duncan MacDougall, in 1906, weighed six humans at the moment of death using a beam balance scale. He reported an abrupt and permanent weight loss at death of 11 to 21 grams (MacDougall, 1907a,b). He also measured 15 dogs with a beam balance scale and found no change in weight. MacDougall describes a violent and abrupt weight change. He had to readjust his beam balance scale to compensate for the change. From his accounts the reader can be sure something dramatic occurred at the moment of death. It is suggested here that there may have been a weight transient that violently disturbed the beam balance. Twining also used a beam balance to weigh 30 mice at death and

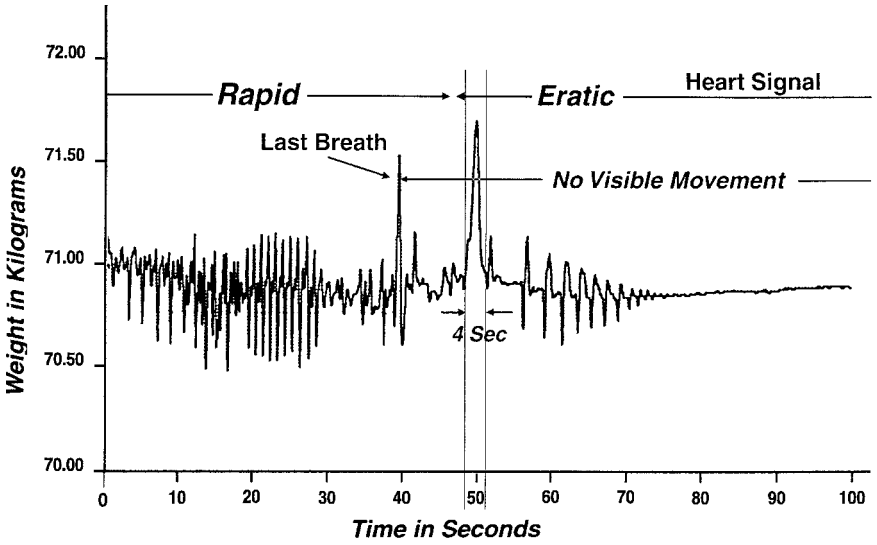

Fig. 2. Weight versus time for sheep 7 near death.

found no measurable change (Twining, 1979). Donald Carpenter has also considered the weight question. He has suggested that the energy required for a ghost to function is limited to around 60 Joules based on anecdotal reports (Carpenter, 1984). He further proposes a new unit "The Mac" named in honor of Dr. MacDougall and hypothesized that the Mac is quantized in units of 20 to 30 Joules, based on the sheep data reported here and on MacDougall's human data. The data in Figure 3 may support this quantum hypothesis (Carpenter, 1998). The energy required to produce the observed weight-gain transients reported here is of the same magnitude as proposed by Carpenter.

Human Weight Measurements

Through the kind hospitality of Dr. Karlis Osis and Donna McCormick at the American Psychical Laboratory in New York, two mediums were weighed while attempting to levitate and go out of body. During the experiments on the first subject three slight transient weight changes were observed, but they were very small. With the second medium no transient weight changes were observed. More recent measurements with Dr. Angela Thompson during remote viewing sessions did not yield any unusual weight changes. Spontaneous transients have been observed during dreams and meditation. Attempts to induce these transients with audio and visual stimulation have not, thus far, been reproducible. Children seem to be the best subjects. A fruitful area may be highly stressed persons as reported by Dr. Blasband who found increased effects on Random Event Generator output while the subjects were under stress (Blasband, 2000).

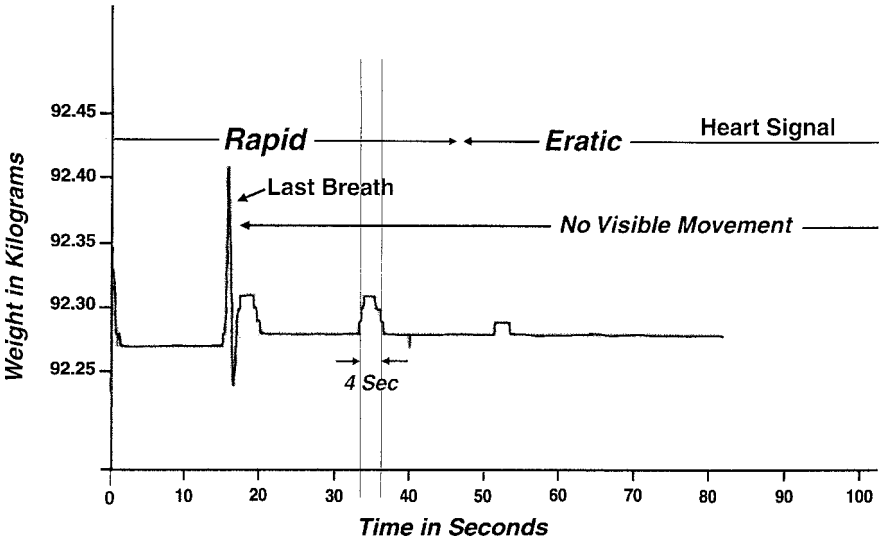

Fig. 3. Weight versus time for sheep 8 near death.

Conclusion

There is no long-term weight change, at death, in the animals tested, within the limits of the equipment and procedure used. However, a 5 second transient weight gain of 18 to 780 grams was observed. Dynamic weight measurements maybe a fruitful area for further investigation. Although the weight gain transients have been observed spontaneously in humans, thus far they have not been reproducible. In contrast, all the adult sheep exhibited a transient gain at the moment of death. These transients may be an artifact of the equipment used or may have a physiological explanation.

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